



Federal Communications Commission
Washington, DC 20554

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DA 23-698

SMALL ENTITY COMPLIANCE GUIDE

Amendment of Section 15.255 of the Commission's Rules

FCC 23-35
ET Docket No. 21-264
Adopted May 18, 2023

In accordance with Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996, this Guide is intended to help small entities—small businesses, small organizations (non-profits), and small governmental jurisdictions—comply with the rules adopted in the above-referenced Federal Communications Commission (FCC or Commission) rulemaking docket. This Guide is not intended to replace or supersede these rules, but to facilitate compliance with the rules. Although we have attempted to cover all parts of the rules that might be especially important to small entities, the coverage may not be exhaustive. This Guide cannot anticipate all situations in which the rules apply. Furthermore, the Commission retains the discretion to adopt case-by-case approaches, where appropriate, that may differ from this Guide. Any decision regarding a particular small entity will be based on the statute and any relevant rules.

In any civil or administrative action against a small entity for a violation of rules, the content of the Small Entity Compliance Guide may be considered as evidence of the reasonableness or appropriateness of proposed fines, penalties, or damages. Interested parties are free to file comments regarding this Guide and the appropriateness of its application to a particular situation. The FCC will then consider whether the recommendations or interpretations in the Guide are appropriate in that situation. The FCC may decide to revise this Guide without public notice to reflect changes in the FCC's approach to implementing a rule, or it may clarify or update the text of the Guide. Direct your comments and recommendations, or calls for further assistance, to the FCC's Consumer Center:

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I. OBJECTIVES OF THE PROCEEDING

In the *Report and Order* in FCC 23-35, ET Docket No. 21-264 adopted in May 2023¹, the Commission revised section 15.255 of the Commission's rules allowing unlicensed field disturbance sensor (FDS) devices (e.g., radars) to operate in the 57-71 GHz band (60 GHz band), while simultaneously ensuring coexistence with both other unlicensed technologies in the band and with passive sensors in the 57.0-59.3 GHz Earth Exploration Satellite Service (EESS) band.

Specifically, the *Report and Order*:

1. Allows both mobile and fixed FDS/radars operation in the entire 57-71 GHz band;
2. Clarifies the relationship between radars and FDS applications and modifies the rules to expand mobile FDS operations within the 60 GHz band, including within the 61.0-61.5 GHz sub-band, where higher powered operations are currently permitted, but only for fixed use;
3. Permits various Effective Isotropic Radiated Power (EIRP) levels along with specific duty cycle restrictions related to specific segmentations of the band for FDS devices that limit their operating frequencies to the 57-64 GHz portion of the 57-71 GHz band. The *Report and Order* found these distinctions offer the best opportunity for new and existing unlicensed devices to successfully co-exist in the 60 GHz band. These limits are illustrated in Tables 1 and 2 in the Compliance Requirements section below;
4. Permits FDS operation for on-board unmanned aircraft (UA) flying at altitudes less than 121.92 meters (400 feet) above ground level, limited to the 60-64 GHz band, at up to 20 dBm peak EIRP subject to a 50% duty cycle, as illustrated in Table 3 below.

These rule changes establish clear technical and operational provisions for multiple band segments. For example, under the adopted rules, new fixed and mobile FDS devices are permitted to implement modulation techniques such as pulse or frequency-modulated continuous-wave (FMCW) as a means of facilitating new use cases such as installation on low-flying unmanned aircraft. Further, the adopted rules will support safety-related novel use cases that will likely see widespread deployment, such as vehicle occupant detection, chest movement detection to determine breathing patterns, and eye lid movement detection to determine driver alertness. These new applications for FDS/radars will significantly help small entities in developing products to meet the various needs of the American public in band segments that have demonstrated great potential for innovative products and services. Additionally, expanding the flexibility of unlicensed FDS/radars in the 60 GHz band will provide an advantage to small entities seeking to access this spectrum without the complication or cost of needing to obtain a license by operating FDS/radars in other frequency bands.

¹ *Amendment of Section 15.255 of the Commission's Rules*; ET Docket No. 21-264, Report and Order, FCC 23-35, released May 19, 2023) (*Report and Order*).

II. COMPLIANCE REQUIREMENTS

A. General Information

In the 60 GHz band, FDS devices are regulated under section 15.255 of part 15 of the Commission's rules.² Part 15 of the FCC rules contains the technical requirements for radio frequency (RF) devices that may be operated without an individual license. All part 15 devices are required to accept harmful interference from other authorized operations, and are prohibited from causing harmful interference to other authorized operations.³

Under the part 15 rules, low-power intentional radiators (popularly known as "unlicensed devices") are permitted to operate without an individual license where such use is not anticipated to cause harmful interference to authorized users of the radio spectrum.⁴ Additionally, part 15 intentional radiators must be certified by a designated Telecommunication Certification Body (TCB) before they can be imported into or marketed within the United States, whereas most unintentional radiators can be authorized through a self-approval process in which the manufacturer has the equipment tested to ensure it complies with the part 15 rules, but they do not have to obtain certification through a TCB. However, scanning receivers and radar detectors are required to be certified before they can be imported into or marketed within the United States.

B. General Requirements for FDS/Radars Operating under Section 15.255

1. FDS/radars operating under section 15.255 must be labeled with an FCC identification number as required by section 2.925 and the statement required by section 15.19(a)(3) indicating that the device complies with part 15 of the rules, may not cause harmful interference and must accept any interference received.
2. FDS/radars operating under section 15.255 must provide information to the user as specified in section 15.21.
3. FDS/radars operating under section 15.255 must comply with the frequency stability requirements specified in section 15.255(h).
4. FDS/radars operating under section 15.255 must comply with the spurious emission requirements specified in section 15.255(d).
5. Applications for equipment authorization of FDS/radars operating under section 15.255 must contain a statement confirming compliance with the radio frequency radiation exposure requirements specified in sections 1.1307(b), 2.1091 and 2.1093 for both fundamental emissions and unwanted emissions.⁵

² 47 CFR § 15.255.

³ 47 CFR § 15.5(b).

⁴ The fundamental operating conditions under part 15 are that the operator of a part 15 device has no vested right to continued use of any given frequency, must accept interference that may be caused by the operations of authorized users or other unlicensed devices, and must not cause harmful interference it causes. Should harmful interference occur, the operator is required to immediately correct the interference problem, even if correction of the problem requires ceasing operation of the part 15 equipment causing interference. *See* 47 CFR § 15.5.

⁵ *See* 47 CFR § 15.255(g).

6. Measurement procedures that have been found to be acceptable to the Commission in accordance with 47 CFR § 2.947 may be used to demonstrate compliance.⁶

C. FDS/Radars Operating throughout the 57-71 GHz Band

The revised section 15.255 rules allow all FDS/radars, whether mobile or fixed, to operate in the entire 57-71 GHz band at the existing +10 dBm EIRP limit without any additional restrictions (e.g., duty cycle limit, or transmitter conducted output power limit).

[CONTINUED ON NEXT PAGE]

⁶ See 47 CFR § 15.255(i).

D. FDS/Radars Other than Pulse FDS/Radars Operating in the 57-64 GHz Band

FDS/radars are allowed to operate at higher EIRP limits within the 57-64 GHz band subject to certain limitations based on band segmentations, as illustrated in Table 1 below.

Table 1 – Requirements for FDS/Radars other than Pulse Radars

Mode	Frequency Range	Use Cases	Power Limit (Peak EIRP)	Off-Time Requirement: off-times (≥ 2 ms) must sum to at least X ms per 33 ms interval
Field disturbance sensors/radars excluding outdoor drones /UA	57.0 - 59.4 GHz	All	20 dBm for indoor; 30 dBm for outdoor applications, including vehicular	None
	57.0 - 61.56 GHz	All	3 dBm	None
	57.0 - 61.56 GHz	All	20 dBm	16.5 ms off time per 33 ms
	57.0-64.0 GHz	All	14 dBm	25.5 ms off time per 33 ms
	57.0-64.0 GHz	Fixed outdoor or vehicular uses (except in-cabin)	20 dBm	16.5 ms off time per 33 ms

1. Switching between requirements in frequency ranges is allowed in successive 33 ms frames (for example, operation in 57-61.56 GHz under applicable parameters in the first 33 ms frame followed by operation in 57-64 GHz under applicable parameters in the second 33 ms frame, *etc.*).

2. No separate duty cycle requirements are imposed on active 60 GHz transmitters beyond what is stated in the right-most column.

3. Fixed operation includes temporarily or permanently fixed operations. Vehicular uses include operations where the device is installed within or on the exterior of a vehicle intended for outdoor use (such that any indoor use is incidental – for example, an automobile in a parking garage) but excludes all in-cabin applications or operations.

E. Pulse FDS/Radars Operating in the 57-64 GHz Band

Although the rules are intended to cover radars using various types of modulation techniques, the revised rules establish a separate rule for pulse FDS/radars with pulse durations of less than 6 ns, as specified in Table 2 below.

Table 2 – Pulse Radars Requirements

Technical Parameter⁵	Permissible Pulse Radar Operations
Operating frequency high	64 GHz
Operating frequency low	57 GHz
Duty cycle	10%, evaluated in any 0.3 μs time window
Average EIRP	13 dBm, evaluated in any 0.3 μs time window, and the average integrated EIRP within 61.5 to 64.0 GHz shall not exceed 5 dBm in any 0.3 μs time window
Pulse duration	< 6 ns
Peak EIRP	Peak RF emissions must not exceed 20 dB greater than the maximum permitted average emission limit applicable to the equipment under test

F. FDS/Radars Operating On-board Unmanned Aircraft (UA) in the 60-64 GHz Band

FDS/radars are permitted to operate on-board unmanned aircraft (e.g., drones) flying at altitudes less than 121.92 meters (400 feet) above ground level in the 60-64 GHz band at the required specifications in Table 3 below.

Table 3 –Requirements for FDS/Radars On-Board Unmanned Aircraft

Mode	Frequency Range	Use Cases	Power Limit (Peak EIRP)	Off-Time Requirement: off-times (>= 2 ms) must sum to at least X ms per 33 ms interval
Outdoor drones/UA	60-64 GHz	Drones/UA	20 dBm	16.5 ms off time per 33 ms

III. RECORDKEEPING AND REPORTING REQUIREMENTS

The Commission's actions in the *Report and Order* did not create any new recordkeeping or reporting requirements.

IV. IMPLEMENTATION DATE

All rule changes in the *Report and Order* are effective as of August 23, 2023 (30 days after the Federal Register publication date of July 24, 2023). FDS/radar devices that are approved by TCBS beginning six months after the effective date of the *Report and Order* must comply with the new rules. At the conclusion of this transition period, all waivers for 60 GHz FDS/radars that are currently in effect shall be terminated. However, any 60 GHz FDS/radar device that was certified to operate under waiver that does not cause harmful interference can continue to operate until its natural replacement. Any equipment that is subsequently modified, however, must be brought into compliance with the new rules.

V. INTERNET LINKS

A copy of the *Report and Order* is available at:

<https://www.fcc.gov/document/fcc-empowers-short-range-radars-60-ghz-band-0>.

A copy of the Federal Register Summary of the *Report and Order* is available at:

<https://www.govinfo.gov/content/pkg/FR-2023-07-24/pdf/2023-15367.pdf>

Measurement procedures of unlicensed wireless devices, including 60 GHz FDS/radars operating under § 15.255 of the rules, may be found in ANSI C63.10-2020, *American National Standard Of Procedures For Compliance Testing Of Unlicensed Wireless Devices*, available at:

<https://webstore.ansi.org/standards/ieee/ieeestd63102020>.

The FCC maintains a web-based system that is used to submit inquiries to its Laboratory, as well as to search for previous rule interpretations and frequently asked questions. This system, called the OET Knowledge Database (KDB), can be accessed at [OET Knowledge Database \(KDB\) \(fcc.gov\)](https://www.fcc.gov/oet/kdb).